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CONCRETE RAILROAD TIE WITH GUIDE PLATES FOR THE RAIL BASE

BACKGROUND OF THE INVENTION:

The invention relates to a concrete railroad tie, especially to a two-block railroad tie, with an elastic rail support for ballast and solid tracks, with guide plates with twisting-prevention devices disposed in the supporting region between the base of the rail and the lateral, raised shoulders of the railroad tie.

For all conventional, concrete railroad ties, whether monoblock railroad ties or two-block railroad ties for ballast and solid tracks, continuous, relatively deep depressions are produced in the concrete next to the raised shoulders of the railroad tie for accommodating a correspondingly protruding rib of the guide rails, which are constructed as angle guiding plates.

It is one of the disadvantages of this construction that, when producing the concrete railroad ties in the casting molds, inserts with high ribs must be introduced in order to form the depressions. These inserts can only be produced from very high plates, which must be milled out correspondingly deep. This means that the loss of the very expensive material of these inserts is very appreciable and that the processing costs are very high, because the depressions have different radii of curvature on the inside and outside.

SUMMARY OF THE INVENTION:

It is therefore an object of the invention to configure a concrete railroad tie of the type named above, so that simpler guiding plates, occupying less space, can be used and that mold inserts, which are provided with high lugs and particularly complicated to manufacture, are avoided.

Pursuant to the invention, this objective is accomplished owing to the fact that support region is constructed essentially flat without continuous deep depressions. Advantageously, the essentially flat support region is provided with lugs to prevent twisting.

Due to the omission of the depressions, which previously were basically provided, inserts, which are intended for the casting molds for producing the concrete railroad ties and are expensive to manufacture, are omitted. Furthermore, there is the possibility of using simpler guide plates without the high ribs, which prevent twisting.

The invention, moreover, is based on the realization that, in view of the contact between the guide plates and the raised shoulders, these ribs, which prevent twisting, can develop the additional, twisting preventing effect only to a limited extent. Moreover, it is possible to achieve this effect in a similar manner with considerable less expense by protruding lugs, which prevent twisting.

Aside from the possibility of providing the support region with centrally disposed elevations, which limit the guide plates on the inside, provisions can also be made, in a development of the

invention, that the support region, in the area of each guide plate, preferably has two lateral lugs to prevent twisting, which engage corresponding recesses in the guide plate.

In this connection, these lugs, which prevent twisting, may be cemented to the railroad tie or formed by dowels, especially by plastic dowels, which are pressed into prefabricated recesses into the concrete.

Finally, is also within the scope of the invention to provide, instead of lugs that prevent twisting, small depressions, which prevent twisting, in the region of the lateral edges of the support area and which are engaged by appropriate lugs of the of the plate that prevents twisting.

Further advantages, distinguishing features and details of the invention arise out of the following description of some examples as well as from the accompanying drawings.

IN THE DRAWINGS:

Figure 1 shows a partial section through a conventional, highly elastic rail fastening for solid tracks,

Figure 2 shows a plan view of the rail fastening of Figure 1,

Figure 3 shows an inventive two-block railroad tie for constructing a Rheda 2000, solid track system,

Figure 4 shows a plane view of railroad tie of Figure 3,

Figures 5 to 7 show sections along the lines V-V, VI-VI or a view along the arrow VII of the railroad tie of Figures 3 and 4,

Figure 8 shows an enlarged projection of the rail support area of a single-block of the railroad tie of Figures 3 and 4 without additional lugs for preventing twisting,

Figure 9 shows a plan view of the rail support area of Figure 8, and

Figures 10 to 21 show projections and associated plan views of modified rail support areas with differently constructed lugs to prevent twisting.

DESCRIPTION OF THE PREFERRED EMBODIMENT:

Figure 1 and 2 show a conventional highly elastic rail fastening for solid tracks with a rail support area 3, which is disposed between two raised shoulders 1 of the concrete 2 of the railroad tie and has, aside from a flat middle section, two deep depressions 4, which traverse the railroad tie transversely and accommodate rib-shaped bends 5 of the angle guiding plates 6. These angle-guiding

plates 6 are in lateral contact with the base 7 of the rail 8 and are supported at on the other side at the shoulders 1 of the concrete. For the highly elastic mounting of the rail 8, initially an intermediate plate 9 and, on the latter, a base plate 10 are disposed on the rail support area 3. Finally, a further 2 to 12 mm thick intermediate layer 11 is disposed on the intermediate plate 9 underneath the rail base 7. The conventional W-shaped anchor clamps, which can be fastened with the help of railroad tie bolts 13, which in turn engage screw-in dowels 14 in the concrete 2 of the railroad tie, are labeled 12.

The preinstalled position of the rail fastening parts is shown in Figure 2 and the installed position in Figure 3.

Figure 3 to 7 show a two-block railroad tie, the individual blocks 2'', which are connected with one another in the example shown by reinforcement constructed as lattice beams 15, being provided with rail support areas 3'', which are constructed essentially flat without the continuous depressions 4 shown in Figures 1 and 2. As a result, there is no need to use inserts with high ribs, which are complicated to manufacture, for the casting molds for producing the railroad ties. On the other hand, the guiding plates 6'' also no longer require the ribs 5, which are present in Figures 1 and 2.

For most embodiments, the raised shoulders 1 adequately prevent twisting of the set-down guide plates. In order to prevent it even better, especially in the pre-installed state, in much the same way as in the case of conventional plates with ribs, which engage deep depressions in the concrete

railroad tie, two lateral lugs 16, which prevent twisting, may be disposed on the flat support region 3'' in the area of each guide plate. The lateral lugs 16 are configured either as shown in Figures 10 and 11 or as shown in Figures 12 and 13, in which they are constructed and disposed only somewhat differently geometrically and cemented, for example, on the support areas 3''.

Figures 14 and 15 show a variation in which the lugs 16, which prevent twisting and are cemented on, are replaced by plastic dowels 18, which are pressed into pre-fabricated recesses 17 of the concrete 2 or cemented in during the manufacture and engage appropriate recesses 19 of the guide plates, so as to prevent twisting.

Finally, Figures 16 and 17 show an embodiment, in which centrally disposed web-like elevations 20 are integrally molded in the support area 3'' for the rails and form a boundary on the inside for the guide plates. In combination with the shoulders 1, these elevations 20 ensure excellent protection against twisting for the guide plates 6''.

In Figures 18 and 19, a variation is shown, in which the rail support 3 is provided in the region of the raised curvature to the shoulders 1 with short, relatively low depressions 21, which are disposed in the region of the outer edges of the rail support 3'' and which are engaged by appropriately shaped lugs 22, which protrude over the lower support surface of the guide plate 6''.

The example of Figures 20 and 21 differs from that of Figures 18 and 19 owing to the fact that the lugs 22'' are disposed not at the outside of the guide plates 6'', but in the region of their

inner side, facing the rail base, and the depressions 21'' correspondingly are also offset further from the shoulders towards the inside.